

$m_1 = m_2$ LINES ARE PARALLEL

$m_1 = -\frac{1}{m_2}$ PERPENDICULAR LINES

$$m_1 = 4 \quad m_2 = -\frac{1}{4}$$

$$m_1 = \frac{1}{7} \quad m_2 = -7$$

$$m_1 = -\frac{3}{11} \quad m_2 = \frac{11}{3}$$

$$\textcircled{1} \quad y = -3x + 2$$

$$m_1 = -3$$

$$m_2 = -3$$

$$y = mx + b \quad \begin{pmatrix} -2, 3 \\ x_1 \quad y_1 \end{pmatrix}$$

$$y - y_1 = m(x - x_1)$$

$$y - 3 = -3(x - -2)$$

$$y - 3 = -3(x + 6)$$

$$\begin{array}{rcl} y - 3 & = & -3x - 18 \\ +3 & & +3 \end{array}$$

$$y = -3x - 15$$

$$\textcircled{2} \quad y = 4x + 2 \quad \begin{matrix} (5, -3) \\ x_1 \quad y_1 \end{matrix}$$

$$m_1 = 4$$

$$m_2 = 4$$

$$y - y_1 = m(x - x_1)$$

$$y - -3 = 4(x - 5)$$

$$y + 3 = 4x - 20$$

$$\begin{array}{r} -3 \quad +3 \\ y = 4x - 23 \end{array}$$

$$\textcircled{3} \quad \begin{array}{r} 3x + 4y = 8 \\ + - 3x \end{array} \quad \begin{array}{l} (4, -3) \\ x_1 \quad y_1 \end{array}$$

$$\begin{array}{r} 4y = 8 - 3x \\ \hline 4 \quad 4 \quad 4 \\ y = 2 - \frac{3}{4}x \end{array}$$

$$m = -\frac{3}{4}$$

$$y - y_1 = m(x - x_1)$$

$$y - -3 = -\frac{3}{4}(x - 4)$$

$$\begin{array}{r} y + 3 = -\frac{3}{4}x + 3 \\ -3 \quad -3 \end{array}$$

$$\begin{array}{r} \frac{3}{4} \cdot 4 \\ y = -\frac{3}{4}x \end{array}$$

$$(4) y = -2x + 4 \quad (-2, 5)$$

$$m_1 = -2$$

$$m_2 = 1/2$$

$$y - y_1 = m(x - x_1)$$

$$y - 5 = 1/2(x - 2)$$

$$y - 5 = 1/2x + 1$$

$$\begin{array}{r} +5 \\ \hline y = 1/2x + 6 \end{array}$$

$$\frac{1}{2} \cdot 2 = 1$$

$$\textcircled{5} \quad \begin{array}{ccc} 12x + 4y = 8 & & \\ + -12x & & + -12x \end{array}$$

$$\begin{pmatrix} 3, -1 \\ x, y, \end{pmatrix}$$

$$\frac{4y}{4} = -\frac{12x}{4} + \frac{8}{4}$$

$$y = -3x + 2$$

$$m_1 = -3$$

$$m_2 = \frac{1}{3}$$

$$\frac{1}{3} \cdot 3$$

$$y - 1 = \frac{1}{3}(x - 3)$$

$$y + 1 = \frac{1}{3}(x - 3)$$

$$y + 1 = \frac{1}{3}x - 1$$

$$y = \frac{1}{3}x - 2$$

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$$2x - 5y = 15 \quad (5, -2)$$

PERPENDICULAR $m_2 = -\frac{1}{m_1}$

① $m \quad y = m_1x + b$

② $-\frac{1}{m_1}$

③ $y - y_1 = m_2(x - x_1)$

④ $y = m_2x + b$